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A PILOT PROJECT IN WHICH 47 MENTALLY HANDICAPPED NAVAJO CHILDREN WERE ENROLLED IN SPECIAL CLASSES AT THE TEEC NOS POS BOARDING SCHOOL IN TEEC NOS POS, ARIZONA, IS DESCRIBED. THESE CHILDREN WERE SELECTED FROM THE SAN JUAN AND SHIPROCK BOARDING SCHOOLS BY USE OF A TEACHER REFERRAL FORM. THE PROJECT WAS DIVIDED INTO FIVE PHASES--(1) SCREENING OF CHILDREN TO DETERMINE THOSE WHO WERE MENTALLY RETARDED, (2) PREPARING INDIVIDUAL BEHAVIORAL PROFILES ON EACH OF THE SELECTED CHILDREN, (3) MEDICAL AND PARAMEDICAL EXAMINING OF THE REFERRAL GROUP, (4) STAFFING THESE CHILDREN TO DETERMINE THE NATURE OF HANDICAPPING CONDITIONS, AND (5) TEACHER AND SUPERVISION, SPECIAL CLASS ORGANIZING, AND THE INSTRUCTIONAL PROGRAM. PARTICULAR EMPHASIS IS GIVEN TO DESCRIPTION OF THE USE AND RESULTS OF PSYCHOLOGICAL TESTS USED IN THE PROJECT. A DISCUSSION OF TEACHING ENGLISH AS A SECOND LANGUAGE TO NAVAJO CHILDREN IS INCLUDED IN AN ATTACHED APPENDIX. (ES)

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# AN INTERDISCIPLINARY APPROACH IN THE IDENTIFICATION OF MENTALLY RETARDED INDIAN CHILDREN

## ADDENDUM

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Addendum - 1966

# An Interdisciplinary Approach in the Identification and Education of Mentally Retarded Indian Children

## Summary Review and Introduction

In the spring of 1964 the Branch of Education of the Bureau of Indian Affairs initiated a pilot study in the identification of mentally retarded Indian children.[1] This project was also implemented with personnel and funds from the U.S. Public Health Service, Division of Indian Health, and the Bureau of Indian Affairs, Branch of Welfare.

Two schools, Shiprock Boarding and San Juan Boarding, located at Shiprock, New Mexico, on the Navajo Reservation, were selected as the locale for the pilot study. Both schools were close to the Shiprock Indian Hospital and the combined enrollment of the two schools was approximately 1,200 students ranging from beginner groups through the fifth grade. These two factors constituted an appropriate environment in which to conduct the pilot study.

In Phase I of the project, (June 1964) a teacher referral form was distributed to the academic staff members of both schools and they were asked to refer those underachieving children whom they suspected or knew to be mentally retarded in addition to their other problems. During Phase I a total of 56 children were referred by the teachers of San Juan and Shiprock Boarding Schools. Thirty-five of the youngsters were classified as mildly to moderately retarded. An additional twelve presented unresolved problems in differential diagnosis. This group of twelve children were classified as "transition" students and were enrolled in the special program for one year. It was agreed that their retardation, if any, was minimal and the children would, in all likelihood, be able to move out of the special program once their medical and emotional problems received appropriate attention.

In Phase II, (July - September 1964) home visits were made, social and past medical histories were gathered and cumulative folders were prepared for use by the medical and clinical staff.

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[1]U.S. Department of the Interior, Bureau of Indian Affairs, Education, An Interdisciplinary Approach in the Identification of Mentally Retarded Indian Children, (Ogden, Utah: Defense Printing Service, 1965) June, 1965.

In Phase III, (October 1964 - March 1965) the referral group received medical and paramedical examinations. On referral from the medical and clinical staff studies were made of psychological testing, electroencephalograms, speech and hearing evaluations, and pediatric, neurological, ophthalmological and psychiatric examinations.

In Phase IV, (April - August 1965) staffing[1] of individual children was conducted for the purpose of arriving at a consensus as to which children were mentally retarded and to refer a child for further study in those cases where data did not permit a clear-cut differential diagnosis. Master files were prepared.

## PHASE V: The Instructional Program

In September 1965, this group of 47 youngsters were enrolled in four classes at Teec Nos Pos Boarding School in Teec Nos Pos, Arizona. For those who are not familiar with the Bureau of Indian Affairs boarding schools, the following information will be helpful in understanding the environment in which the special program took place.

Of the total number of Navajo children enrolled in school, approximately 44 percent are attending public schools and about 5 percent are enrolled in various kinds of mission schools. The remaining youngsters (about 51 percent) are enrolled in schools operated by the Bureau of Indian Affairs. Of this group, 90 percent are attending boarding schools. These schools are, for the time being, a necessary facility in those areas of the Navajo Reservation which are geographically isolated from towns and cities and where the Navajo families live far from arterial highways and from other families. Each year the children from these isolated, scattered families are brought to the nearest boarding school where they live in residence until the end of the school year when they return to their homes. The parents are encouraged to visit their children and take them home for holidays but, for the most part, the youngsters live, eat, sleep, and are educated in a boarding school complex.

The children are housed in large dormitories staffed by school personnel who supervise their out-of-school activities and attempt, insofar as possible, to provide the children with at least a minimum amount of time and attention. Night attendants and instructional aids, usually Navajo, try to help the homesick, lonely children adjust to the glaring unfamiliarity of the English speaking school environment. In some cases, children from broken homes are placed in boarding schools which serve as a haven of physical protection and comfort for the disturbed, neglected, or predelinquent child.

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[1]The term "staffing" refers to the medical practice of bringing together the hospital staff for purposes of discussing medical problems, establishing a diagnosis and agreeing on a course of treatment. In the pilot study all members of the diagnostic staff and appropriate school personnel met together to discuss the results of each examination and to agree as to the nature of each child's learning handicaps.

Although the boarding school with its huge complex of dormitories, school buildings, dining hall and housing for personnel and its enrollment of hundreds of children is a far cry from the type of environment best suited to the needs of young children away from home, it is, for the time being, the only feasible facility for educating geographically isolated Navajo children.

It was unfortunate that it was not possible to house the pilot study classes in one of the two boarding schools referring the children, but in one case the school was scheduled for transition to a junior high and in the second case the school building was scheduled for demolition. This meant that the project youngsters were transferred from their home schools to Teec Nos Pos Boarding School some 30 miles away. This made it extremely difficult for the parents to visit their children. The fact that only one child was withdrawn from the project as a result of the transfer is a clear indication of the high degree of parent cooperation which the project staff enjoyed.

The teachers[1] of the four groups had previous experience working with Navajo children and had some academic training and experience with slow learning, disturbed or delinquent non-Indian children. Two teacher aids, both Navajo, were assigned to the special program to assist the teachers in preparing instructional materials and in supervising group activities while a teacher worked individually with a child or small group. They also acted as substitutes when the teachers were unable to meet their class due to illness and provided secretarial and clerical help in preparing lesson plans, anecdotal records and monthly reports.

The teachers were given a free hand to modify and adapt available curriculum and encouraged to develop experimental materials which they felt might be useful in working with their particular group of youngsters.

No special provisions were made for the pilot study youngsters in their out-of-school activities or in dormitory living. The youngsters participated in all school activities including, for example, lunch room duty, special programs, sports, art, and crafts. The four teachers and teacher aids shared in the total school responsibilities. The school principal, a warm and intelligent administrator, was actively interested in the educational welfare of the children and eager for the program to succeed.

Granted that the boarding school complex is far from meeting the social and emotional needs of young children it should be clear from the above comments that within the boarding school environment the special class program was initiated under the best possible circumstances. This point is made because all too frequently special classes for exceptional children, particularly in beginning programs, are relegated to the poorest classrooms and assigned to teachers

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[1]Miss Ann Shaw and Mrs. Gladys Taylor (after Miss Shaw's retirement), Mr. John Goodwin, Mr. Alex Wawrziniak and Mr. Wayne McCall. Teacher aides were Mrs. Carmlita Kakazu, Mr. Harry Roanhorse (after Mrs. Kakazu's resignation), and Miss Barbara Curley.

who are weakest in classroom management and teaching power. The rationale for this approach to special education is usually based on two factors: (1) special classes are frequently comparatively small, and they do not require as much classroom space, and (2) the assumption that teachers who find it difficult to handle large groups will do better with small groups.

Nothing, of course, is further from the truth. The teacher of exceptional children, if maximum instructional efficiency is to be achieved, must be above average in organizational ability, self-discipline and skill in handling groups for instructional purposes. It was for this reason that the job descriptions of the four special teaching positions were assigned a Master Teacher rating with a salary commensurate with the rating. This administrative device made it possible to be highly selective in recruiting the special class teachers. Housing the special classes in a regular boarding school and providing the best in classroom environment also mediated against loss of self-esteem on the part of special class children and morale on the part of their teachers. This arrangement also made it possible to plan for transfer of the special class transition students to an appropriate regular program at that point where they had made sufficient academic progress to warrant a partial or complete transfer to a regular instructional program. For example, after the first three months, several children were assigned to regular classes for those subjects on which they were working at grade level and received the rest of their instruction in the special class.

Prior to the actual arrival of the students, the project coordinator met with the total teaching staff to explain the nature, aims, and goals of the pilot study and to describe in some detail the difficulties of the youngsters who would be participating in the special program. When questions were raised as to whether the children should be handled any differently from the enrollees in the regular program, the teachers and guidance personnel were urged to make every effort not to select out the pilot study youngsters for any special kind of preferential treatment and to include them in as many of the school and dormitory activities as possible. It was, however, suggested that when responsibilities were assigned to the children that time enough be taken to make certain that they understood the task assigned to them and to whom they should report if problems were encountered.

Once the children arrived and school was in session, a number of problems developed most of which seem almost indigenous to the first year of any new special education program. For example, a great deal of planning had gone into preparing the requisitions for instructional equipment and supplies for the four classes and additional funds provided to cover their cost. The coordinator assumed that the school personnel would process the order and the school personnel assumed that the coordinator would place the order. It was not until the teachers arrived that it was discovered that the requisitions so painstakingly prepared had never been processed simply because everyone assumed that someone else would "see to the special class children."

There are several last names among the Navajo comparable to the Smith's and Brown's of the non-Indian culture. Several days after school started, it was reported by the special class teachers that certain children were still missing from their classes even though they had been checked in at the dormitory. A search revealed that this group of children were happily enrolled in regular

programs at Teec Nos Pos, and in one case, in a regular class in a different school. Their teachers had accepted their enrollment because there were so many Yazzies and Benallys that one or two extra was par for the course.

The one female teacher with many years of experience in working with Indian children and a master in the development of instructional materials in the absence of even modest supplies and equipment, became eligible under an act of Congress which liberalized retirement benefits for a substantial bonus upon retirement and promptly did so. Her replacement lasted only a few days and it then became necessary to split the youngest group among the three remaining teachers until such time as it became possible to assign a third teacher to the group. Mrs. Gladys Taylor, the third teacher, calmly and quietly reassembled the children and it can be said without qualification that this group, even with three teachers in as many months, had the best year of their academic life.

Perhaps the most serious problem resulted from the fact that the position of "academic head" (a term describing the position of an instructional supervisor) was not filled until late in the year, and as a result, the four special class teachers received only a minimum amount of supervisory assistance in the very difficult tasks of developing a curriculum for the special class program. The fact that some really excellent instructional materials and teaching guides were developed during the year without adequate supervisory assistance and support, illustrates the high degree of professional competence which characterized the teaching staff and teacher aids who assisted them.

An entirely different type of problem area experienced during the academic phase of the pilot study was the breakdown in communication between the school personnel; the Indian Health Service; and the Department of the Interior, Bureau of Indian Affairs, Branch of Welfare.

In a staff conference prior to the opening of school, procedures were worked out with personnel from the Shiprock Indian Hospital, Bureau of Indian Affairs Social Service Representative, and the coordinator of the pilot study to provide regular followup studies of youngsters in the special program who had medical and psychiatric problems. Once the coordinator left the local scene, however, it became quite clear that the referral procedures were not clearly understood and consequently the followup which would have been helpful to the teachers did not take place until the end of the year when the coordinator returned to Teec Nos Pos.

One problem which frequently occurs, particularly during the first year of a special program for exceptional children, did not develop at Teec Nos Pos. It is not unusual for children enrolled in special classes to experience various types of derogatory treatment at the hands of their nonspecial classmates. The fact that this did not occur at Teec Nos Pos is felt to be at least partially due to the friendly acceptance and interest in the youngsters by the principal and members of the total school teaching and dormitory staff; attitudes which in turn were reflected by the regularly enrolled students. As a matter of fact, the special program children made many friends among the regular program children and by the end of the year a number of regular enrollees approached

the administrative staff with requests to be transferred to the special classes so they could be with their friends the following year. An additional factor in the widespread acceptance of the children was the fact that they were housed in the same building as the regular program students and routinely included in all school activities. In fact, the only way in which the special program was noticeably "different" was the smaller number of children per class.

In general, the dormitory personnel felt that the children enrolled in the special program were more prone to run away from school than were their peers, presented more disciplinary problems and required more attention than the regular program youngsters. For example, one or two of the older boys began to "find things before they got lost" including, in one case, a horse which they "borrowed" in order to go home for an unauthorized visit. Activities of this type quite naturally created acute anxiety, particularly among the dormitory staff members who, while deeply concerned at some of the more unorthodox activities of the children, were perhaps even more frustrated by the discovery that routine disciplinary measures had little or no effect on the children's behavior. As time went on, however, episodes of petty thievery and absences without leave became increasingly rare and confined almost entirely to periodic exploits of one or two quite severely disturbed children.

What the reported difficulties did clearly indicate was an increased anxiety level on the part of the dormitory staff members because they felt, and rightly so, that additional staff was necessary if the needs of the special program children were to receive more than token attention. This anxiety at not being able to provide the special program children with the kind of individual attention and supervision they needed turned into outright hostility in the case of one or two staff members who resented the demands of the more aggressive youngsters made on their very limited amount of time for the individual child. This situation was partially resolved in early spring when a replacement was hired to fill a vacancy in the dormitory teacher-guidance program. This particular young man was not only a friendly outgoing person deeply interested in the children but also very skilled in organizing out-of-school activities and programs which appealed to the children. Consequently disciplinary problems were noticeably reduced.

In general, it is safe to say that the first year of the special program, although carefully planned, created a wide variety of administrative problems most of which are almost predictably unique to the first year of any type of public school program for exceptional children. The most serious problems occurred not in the classroom but in the out-of-school hours when inadequate staff made it impossible to provide sufficient supervision to keep the children constructively occupied.

In the preceding discussion a number of problems have been identified and discussed within a frame of reference not too dissimilar from special education programs during their first year in any public school setting. In discussing this next problem, however, it becomes necessary to do so within a frame of reference peculiar to the organizational structure of the Division of Education of the Bureau of Indian Affairs.

The pilot study was planned and directed by personnel in the Central Office. A coordinator was hired whose job it was to work with teachers in selecting a population of children appropriate to the aims and goals of the pilot study, coordinate the medical and paramedical studies, prepare staffing agendas, provide accurate reports of conferences, and make certain that the management of the workups on the children moved with maximum efficiency. The fact that the coordinator worked out of the Central Office made it possible for her to move freely and easily within the complex system of intra-agency channels and procedures. The coordinator's role and function as a member of the pilot study diagnostic staff terminated, however, once the special project children were assigned to the boarding school. This was only right and proper since the youngsters once enrolled in a school become the responsibility of the principal and school superintendent. The basic problems arose from the fact that no provision had been made for personnel or time in which to develop special education curriculum or indeed to provide minimum educational objectives for the project children. At the operational level this meant that once the diagnostic phase was completed, no personnel or procedures had been set up to follow through at the instructional--or local level. Thus, the special program teachers were not only without supplies at the beginning of school but without supervisory assistance and without a planned curriculum.

Since no previous programs of this type had been tried out on the Navajo Reservation, none of the available supervisory staff had experience in methods and techniques customarily used in working with retarded and slow learning children. It should be pointed out that in the original plans for the pilot study the need for a special education supervisor had been identified and a job description prepared. This position, however, was eliminated because it appeared to duplicate existing services in the Central Office and was not provided for at the Area or Agency level because the staffing pattern of the Teec Nos Pos Boarding School made no provision for additional administrative personnel due to the needs of the special program.

By the end of the third month, in spite of the absence of a planned curriculum; clear-cut, long-range, educational goals; and adequate instructional supplies and equipment; the special program teachers, with the help of the teacher aids, had devised a substantial amount of instructional materials. Other schools contributed some basic supplies and equipment. Also, in this length of time, the enrollment in the four classes had stabilized. Teachers were teaching and the children were responding with wary interest and a modest amount of real involvement in the job of learning how to learn.

At the midyear a full time instructional supervisor[1] (Academic Head) was added to the Teec Nos Pos staff. This young woman had been trained in working with deaf and aphasic children and although her total school commitments left her little time for the special program teachers she was able to spend some time with them in developing a more adequately planned program.

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[1]Mrs. Betty E. Goss

For example, the teacher of the oldest group of children (CA 12-16), in addition to being a master teacher, had considerable experience in electronics and was able not only to explain the working principles of radio and television but was also a thoroughly competent repairman. With the assistance and support of Mrs. Goss, the instructional supervisor, Mr. McCall, reorganized his class schedule so that the academic subjects were taught mornings and in the afternoons the boys repaired radios, T.V.s, irons, and record players, which staff members were happy to provide. The boys, working under Mr. McCall's supervision, learned to identify the problems, the cost of replacing parts and to decide whether or not the cost of the repair work would be worth it to the customer. If the decision was favorable, the boys were taught how to order the necessary parts from a warehouse catalog and how to complete the necessary repairs. In the afternoons the girls were taught how to use Mrs. McCall's sewing machine and spent long sociable hours remodeling dresses and making clothes for Barbie Dolls. As would be expected, the pleasure and satisfaction the youngsters found in their afternoon projects spread over into their academic work when it became clear that the arithmetic they learned in the morning could be used in the afternoon to figure cost of radio and T.V. repairs or how to measure a skirt to make a hemline even--and shorter.

In one corner of the room a trading post was set up. Shelves were stocked with empty food cartons, a small table held scales and a cash register and play money was distributed to the class. Menus were planned and grocery lists made up for shopping at the "trading post." A life-size plywood sheep covered with white wool was a regularly purchased item, sometimes to "build up a flock" and sometimes for "mutton stew." Arriving back home (the shopper's desk) prices on purchases were checked for correctness against the price list of the local trading post, items were totaled and leftover change counted. This particular project was so popular with the children that it became a permanent part of the classroom equipment and the fake sheep became something of a pet--until he was superseded by a real white guinea pig.

The other three groups of children were also provided with meaningful projects and activities appropriate to their interests and age level. All four teachers, the two teacher aids and the instructional supervisor, met occasionally to coordinate their plans and to write up preliminary outlines of curriculum guides. Teachers of the two middle groups, Mr. Wawrziniak and Mr. Goodwin, spent a good deal of time adapting the materials used in the regular program for work with their groups. For example, they found that teaching sight recognition of the 200 Basic Dolch Word list not only built up the English vocabulary of the children, but also that the way in which the children responded provided their teachers with clues as to their particular type of reading problem(s). In the youngest group, Mrs. Taylor's emphasis was on individualized instruction in the basic skill subjects accompanied by a great deal of art work and music. Since her enrollment was stabilized at seven children it was possible for her to spend a really substantial amount of time with each youngster in what amounted to a tutorial relationship.

Thus, it was that out of the disorder and confusion of the first months of school an instructional program evolved which reflected the strengths and interests of each teacher in relationship to the educational, social and

emotional needs of the children in each group. While it is certainly not to be recommended that any teacher or any child should be placed in the position these four teachers and their classes found themselves at the beginning of the year through no fault of theirs, one must not ever underestimate the creative strengths of teachers and children once they become engaged in the joint task of teaching and learning. In almost any environment, children need stimulating experience but they also need mature and understanding help from their adult contacts so that what is challenging does not become overwhelming and permanently damaging. This group of youngsters had this kind of adult support from their teachers. Their achievements have caused us to reexamine our objectives and redefine them by this addendum as consistent with sound educational philosophy: that the most important goal is to offer each child an opportunity to see himself as worthwhile.

Pretest and Posttest Evaluation and Discussion

When the pilot study was in its planning stage much time and thought were spent in selecting a battery of testing instruments which, hopefully, would be appropriate to the children and the results of which would be useful to the diagnostic staff. Several very competent psychologists were consulted and their opinions solicited as to which instruments they would recommend for use with rural, socio-economically deprived, subcultural children who speak English as a second language.

Only two tests, the Wechsler Intelligence Scale for Children (WISC) and the Porteus Maze, were recommended by more than one psychologist. In one case, a psychologist stated flatly that no test of intelligence should be used because all of them are "unfair" to all children who do not possess white, middle class, urban parents with an income of $10,000 or more and a college education on both sides of the family. While one may understand and sympathize with the point of view implied in the above statement, still one can hardly justify "throwing the IQ out of the window" if one is engaged in the task of attempting to identify children with retarded mental development.

While granting the need for caution and flexibility in the use of intelligence tests in working with rural, disadvantaged Indian children and the even greater need to develop measuring instruments standardized upon the particular population to be measured, still we would agree with Dr. David Wechsler[1] when he says:

> "The IQ has had a long life and will probably withstand the latest assaults upon it. The most discouraging thing about them (the assaults) is not that they are without merit but that they are directed against the wrong target. It is true that the results of intelligence tests, and of others, too, are unfair to the disadvantaged,

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[1]David Wechsler, "The IQ is an Intelligent Test," New York Times Magazine (June 26, 1966).

> deprived, and various minority groups but it is not the IQ that has made them so. The culprits are poor housing, broken homes, a lack of basic opportunities, etc. If the various pressure groups (against the use of intelligence tests) could succeed in eliminating these problems the IQ's of the disadvantaged will take care of themselves."

Along this same line of thought are the results of a research study by Reid and Schoer[1] which suggests that the effect of social class on the WISC may be considerably less omnipresent than many of us have believed.

> "... It is generally assumed," state the authors, "that the lower-class child is at somewhat greater disadvantage on certain types of test items than on others. If this is true and in view of the wide variety of subtests on the WISC there should have been interaction between subtest performance and social class. No such interaction was evident. While it is true that all S's had full scale IQ's between 90 and 110, this does not preclude the interaction between social class and subtest pattern."

The decision to include the WISC in the test battery was made on the assumption that it might be a useful tool in assessing the ability of the children to learn and to solve the tasks required by a particular (school) environment. If this use of a testing instrument is unfair to the disadvantaged and minority groups, then let us agree with Dr. Wechsler that the test is "... simply recording the unfairness of life..."[2] the real thief of underprivileged children's ability to learn in any culture at any time.

Of the remaining test instruments, the Porteus Maze and Bender Gestalt were selected with the hope that they would provide clues in pinpointing specific learning problems involving difficulties in visual motor and visual perceptual skills. The Goodenough-Harris Draw-A-Person test was included with the thought that the children's drawings would be a useful tool in estimating what Dr. Harris defines as "conceptual maturity."[3]

> "... In discussing the abilities tapped by the drawing test," he says, "it has seemed desirable to replace the notion of intelligence with the idea of intellectual maturity, and perhaps more specifically, conceptual maturity. (Emphasis Dr. Harris'.) This change gets away

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[1]William R. Reid and Lowell A. Schoer, "Reading Achievement, Social Class and the Subtest Pattern on the WISC," Journal of Educational Research, Vol. 59 No. 10, July-August 1966, pp. 469-472.

[2]David Wechsler, "The IQ is an Intelligent Test," New York Times Magazine (June 26, 1966).

[3]Dale B. Harris, Children's Drawings as Measures of Intellectual Maturity, (New York: Harcourt, Brace and World, Inc., 1963) p. 251.

> from the notion of unitary intelligence, and permits consideration of children's concepts of the human figure as an index or sample of the concepts generally.... (thus) the Draw-A-Person reveals progress in the child's concepts such that an index can be derived from his inclusion of body detail. This index provides a measure of intellectual maturity that correlates substantially with tests of so-called general intelligence, and relates to the ability to do abstract thinking."

The fifth and final test selected was a modification of the Thematic Apperception Test (TAT) devised by Dr. William Henry of the University of Chicago, Department of Psychology, for working with Navajo Indian children. The drawings on the cards are representational of Navajo family life, clothing, and a desert landscape with occasional horses, goats, and sheep sketched in the background of the drawings.

It was fortunate that this particular project was designed as a pilot study rather than any type of formal research project. The exploratory nature of a pilot study permits a good deal of flexibility on both the operational and theoretical level. In selecting the test battery, for example, it was hoped that the results would not only assist in providing some index of the intellectual potential of the children but that in the course of the testing program it would become possible to reach a decision as to which of the testing instruments, if any, were the most useful and predictable in identifying slow learning, mentally retarded Indian children when used in conjunction with the results of medical and paramedical studies. (It should be noted in passing that at no time during either the planning or implementing of the pilot study was it assumed that the results of the testing could be accepted as a criterion of retardation without substantiating evidence from the other disciplines involved in the pilot study. The report of the psychologists which follows has been very helpful in the overall evaluation of the test battery used in the pilot study.)

The following discussion of the test battery utilized in the pretesting and posttesting was written by Dr. Hans Furth and Dr. James Youniss of the Institute of Thinking and Language at Catholic University, Washington, D. C. Dr. Furth and Dr. Youniss administered, scored, and interpreted the results of the posttest phase of the study. Their sensitive report of the difficulties the children experienced in the testing situation makes the indisputable gains the children made even more interesting.

> General Remarks and Impressions About the Testing of Intellectual Ability in Indian Youngsters. In general we were impressed by the cooperativeness of the youngsters tested in spite of the duration of the testing session (2 to 3 hours), and their linguistic handicap. We mention this point first because earlier reports in the files of these youngsters invariably characterized them as "hostile," and "unwilling to cooperate or respond," etc. We admit that feelings of hostility were felt--better called feelings of frustration--when no verbal replies were forthcoming in response to verbal questions. However, these feelings were within us, the testers, rather than in the youngsters.

It is quite clear that the most obvious major deficiency in educational achievement and test behavior of the Navajo Indian children consists in their linguistic incompetence. This linguistic deficiency has to be taken into account and accepted with good grace with any kind of psychological testing. Otherwise our test results will be taken as merely reflecting lack of linguistic knowledge and as not relevant to what is being measured. Because we have worked with severely linguistically deaf people for many years and have been obliged to forego the use of verbal tests and to rely on measures that are not based on linguistic knowledge, we were prepared to accept the linguistic poverty of the Indian children and interpret the results accordingly.

It hardly needs stressing that tests standardized on an American middle class population are not invariably suitable for the Indian population, quite apart from a linguistic difference. The only safe procedure when using tests that were originally standardized on a different population is the following: If the new population scores are substantially similar to the original scores, one may accept the results as meaningful insofar as test performance is to a considerable degree probably not dependent on social-cultural differences between the populations. If, however, the obtained test results are substantially different (usually lower), one has to be very careful in the interpretation of such findings and not glibly accept the lowered findings as evidence for a deficient capacity of the behavior measured. Even nonverbal tests can be highly culturally determined. Thus, when one deals with a culture that is as different as the Navajo Indian is from the white American it is absolutely necessary in many cases to construct special norms.

In line with the foregoing reasoning we have treated verbal tests of the battery as indicators of verbal skill or lack of it rather than anything else. We did not even compute a verbal IQ based on the Verbal Scale of the WISC which would have been quite misleading and in the vast majority of cases quite meaningless.[1] Of the 47 youngsters tested, there were perhaps only two for whom an approximation to a verbal IQ would have made some sense. But even with these we found extremely low-weighted scores on Vacabulary, Arithmetic, and Comprehension, that was evidently due to lack of English knowledge rather than lack of reasoning. As an example of the linguistic insufficiency of the children, take the easy question on the Arithmetic subtest. "If I cut an apple in half, how many pieces will I have?" The majority of children gave the wrong answer and a significant proportion answered "four." This answer puzzled us for some time until we concluded that the Indian

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[1]As has been previously noted the verbal IQ's were computed later on by a third psychologist, not for evaluating the children but for pretest and posttest comparison as required by the project design.

children must have partially understood the question with the main words being "cut" and "half." This example shows that we were not testing arithmetical reasoning but linguistic comprehension.[1] In our records we thought it best simply to add up the number of correct verbal responses over the five subtests of the verbal scale. This number gives a rough estimate of the linguistic skill of the child and has nothing to do with IQ.

Concerning the Performance Scale of the WISC we found that three of the five subtests were generally suitable: Picture Arrangement, Block Design, and Object Assembly. Coding is a visual-motor speed task to which the Indian youngsters evidently are not accustomed. In spite of constant instructions to proceed at a fast pace and not to stop at the end of a line, the children would invariably look up at the examiner when coming to the end of a line as well as while writing the answers. The children would thus achieve a generally lowered score on this test because of the loss of points for taking too much time. This examiner found that the most suitable procedure was constantly to keep an eye on the children, at frequent intervals to remind them <u>in a low voice</u> to work quickly, and to be ready at the end of one line to point to the beginning of the next line. The other performance test on which the Indians generally scored lower was Picture Arrangement. This test is quite similar to comic strips in that it requires the child to put pictures in a sequential order corresponding to the temporal event depicted by the pictures. On this test it was noted that an item dealing with growing of crops was passed more easily than some supposedly less difficult items.

On our test records we added the <u>Digit Span</u> Forward and Backward Raw Score and observed that on this subtest of the WISC the Indian children were also generally behind the non-Indian norms. Such a result can be readily explained as due to the Indian children's lack of exercise in remembering numbers in their daily lives. With no telephones, no street addresses, television program times, etc., obviously they have less opportunity and reason to recall short number sequences than ordinarily occurs in our culture.

The other nonverbal tests that were administered appeared generally suitable, and the performance of the Indians is probably not appreciably different from the performance of the standard population. The <u>Bender Gestalt Test</u> is perhaps not too revealing with a mental age of nine and upwards. The <u>Porteus Maze Test</u> seemed to work very well with the Indian children, but here too the norms for somewhat older children are perhaps not too reliable. The <u>Goodenough-Harris Drawing Test</u> appeared quite suitable.

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[1]While we agree with Dr. Furth's main point, the particular example cited may also reflect the fact that the concept of "half" is not taught until approximately the middle of the second grade level and many of these youngsters were not yet working at a second grade level. (F. B.)

It was expected that only limited verbal material would be elicited from the Thematic Apperception Test and constant prodding was in nearly all cases absolutely necessary. It is not surprising that the Indian children exhibited a better degree of linguistic performance on the TAT than on WISC. On the TAT there was no need to comprehend any linguistic sentence; the child merely had to look at the picture and express verbally a more or less spontaneous reaction. On the WISC, on the other hand, the first handicap (and probably the main one) was the necessity for comprehension of the linguistic structure that had to precede any meaningful response. (If the message does not get through, one looks in vain for an answer.)[1]

In addition to the test battery described so far, the children were administered the Raven's Progressive Matrices Test in group form. The results on this test were quite meaningful, particularly in cases where the scores were relatively high. It should be remembered that this test was devised for adults and to be given together with a vocabulary test. Its use with children is somewhat speculative and success or failure on a few items can make a huge difference in the final percentile score. To ameliorate this situation, Raven has devised the Colored Progressive Matrices, suitable for children up to age 11. Since our population was generally above this age, we decided not to use the Colored Progressive Matrices but the Standard Progressive Matrices. This test appears to be a promising instrument for probing intellectual capacity, but it certainly would need careful standardization and possibly even modification of items before it could be used with a high degree of confidence. If, however, some child obtains a high score on the present test, such a score is a strong argument in favor of good intellectual ability.

It should be added that these children were tested a little over a year ago on these same tests (except Progressive Matrices), and they may have become increasingly "test wise" by other additional special testing sessions. Such previous testing experience may partly explain the frequent incidence of a higher score this time than last time, although this is surely not the whole story. On the contrary, with such children some form of pretraining for a standardized test is required in order to make up for the lack of social-cultural experience. The examiner's attitude is, of course, also important. In general, if some meaningful IQ score is required for Indian children, the tester must use a great amount of flexibility, common sense (which sometimes requires him to go against standardized instructions) and acceptance of the

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[1]A second report by Dr. Youniss and Dr. Furth while not directly pertinent to the pilot study offers some excellent and thought provoking suggestions concerning the English language problem in the education of Navajo children. This report is included in the appendix.

social-cultural and linguistic limitations of these children. Considering both the desirability of previous test experience and examiner's attitude we believe that the present results are more representative than the earlier ones.

One of the most interesting points raised by the preceding discussion is that the hostile, noncooperative behavior of the children reported during the diagnostic phase of the study was not in evidence at the time of the posttest period when the psychologists "... were impressed by the cooperativeness of the youngsters tested ..." This impression was shared by the special teachers who originally found the children hard to reach, quarrelsome and difficult to involve in the learning situation. By the end of the year the children were, for the most part, alert, interested and involved in the learning experience and had achieved a degree of social competency and peer group identification most rewarding to the children, their teachers and the project staff en toto.

In addition to the observed growth in social competency and self-respect the Goodenough-Harris Draw-A-Person posttest drawings of the children showed, in almost all cases, a measurable increase in conceptual maturity. The results of the Stanford Achievement Test demonstrated a six months gain in academic proficiency. While this is not a dramatic increase, it is still surprisingly substantial considering the fact that most of the children had, on the average, four years of school failure to their credit and a heavy overlay of hopeless certainty that they were unable to learn how to learn and how to behave in a manner rewarding to themselves and others.

In the following Tables Dr. Furth and Dr. Youniss ranked the children as to their estimate of the youngsters' intellectual potential and in terms of the mean scores of the group on the WISC, Goodenough-Harris Drawing Test, Porteus Maze, and Bender Gestalt.

Intellectual levels are ranked according to the classifications in Table I. Mean scores on the different tests are listed on the following page in Table II.

TABLE I

INTELLECTUAL RANKING

| | |
|---|---|
| Bright normal | 9 |
| Average + | 6 |
| Average | 11 |
| Average - | 5 |
| Dull normal | 10 |
| Borderline | 2 |
| Mildly retarded | 3 |
| Retarded | 1 |

TABLE II

MEAN SCORES

| | | |
|---|---|---|
| WISC performance | IQ | 93.55 |
| Goodenough-Harris Drawing Test (Self) | Standard Score | 103.30 |
| Porteus Maze | Test Quotient | 109.87 |
| Bender Gestalt — Errors in Koppetz's Developmental Scale | | 2.83 |
| Raven's Progressive Matrices | Number Correct | 23.85 |
| WISC Digit Span | Forward | 4.45 |
| WISC Digit Span | Backward | 2.55 |
| WISC Verbal Scale | Number of Items Passed | 24.53 |
| WISC Subtests (weighted score): | | |
| Picture Completion | | 9.94 |
| Picture Arrangement | | 6.96 |
| Block Design | | 9.74 |
| Object Assembly | | 10.37 |
| Coding | | 8.40 |
| WISC Vocabulary (raw score) | | 12.71 |

The 12 youngsters referred to earlier as "transition" students are included in the 9 youngsters rated "bright normal" and the remainder in the "above average" range. These children were included in the final phase of the pilot study not because they had been classified as mentally retarded but because learning and behavior difficulties were so overlaid with social and emotional problems that the diagnostic staff was unable to reach a decision as to whether or not mental retardation was a factor contributing to their academic and social retardation.

The fact that the major proportion of the children did so much better on the posttest than on the pretest cannot be accounted for on the basis of differences in test administration and scoring since the results in both the pretest and the posttest were checked by independent observers who knew neither the children nor the individuals administering the tests and who scored the tests similarly without knowledge of the previous results.

In studies involving children with learning and behavior problems who are transferred to a new environment or provided "special programing" and who consequently show measurable gains in social and academic proficiency it is always tantalizing to attempt to pinpoint specific reasons for their gains. In this particular pilot study one is tempted to suggest that small classes, unusually competent teachers, specialized instructional methods and an interested, friendly, supportive boarding school atmosphere were major factors contributing to the growth of the children. However, the truth of the matter is that without control groups, identification and control of the myriad variables inherent in pilot projects involving children in a classroom milieu, one must refrain from any attempt to dignify one or more factors as the "causes" for growth.

Suffice it to say that a group of 47 rural, disadvantaged Navajo children with learning and social problems so severe they were "... significantly impaired in their ability to adapt to the demands of society ..."[1] made sufficient social, emotional, and academic gains in one year's time to more than justify the time and money invested in them over the preceding two years.

Perhaps it is as Hymes[2] said, "The most meager background will do, if the world the children meets can do just a little fancy footwork to be ready for him. If we stay stuck with one favorite color--white, and one favorite style--verbal, and one favorite background--middle class, we make the love affair between the child and his world the rare privilege of a favored few, instead of the prized outcome for all."

In summary, it would appear from the pretest and posttest data and the impressions of the project staff that out of the battery of tests selected for use with this particular group of children, the Goodenough-Harris Drawing Test was both appropriate to use with the Navajo children and the most sensitive measurement of conceptual growth and maturation. The Wechsler Intelligence Scale for Children, granting its limitations when used with rural, disadvantaged children with a linguistic deficit in English, was found to be a useful tool in estimating the abilities necessary to learn and to solve tasks required by a particular school environment.

Of the remaining testing instruments the Bender Gestalt and Porteus Maze were helpful during the diagnostic period when the interdisciplinary team was attempting to pinpoint visual motor and visual perceptual problems and evidence of central nervous system damage and/or dysfunction, but they were of little or no significance in the posttest evaluation since these disabilities were at a minimum in the total group. It may be, as Dr. Wechsler[3] points out, that

> ... contrary to claims, the results of performance tests have been generally disappointing. The findings indicate that while they may be useful in certain situations and for certain diagnostic groups, they prove quite unsatisfactory as alternates for verbal scales. They correlate poorly with verbal aptitudes and are poor prognosticators of overall learning ability as well as school achievement. Above all they have turned out to be neither culture free nor culture fair ... Nonverbal even more than verbal tests, need to be related to particular environments and, from a practical point of view are both limited in range and difficult to contrive. Finally, many

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[1]Report of the President's Panel on Mental Retardation: A definition of mental retardation.

[2]James L. Hymes, Jr., to the Association for Childhood Education International Conference, New York, 1965.

[3]David Wechsler, "The IQ is an Intelligent Test," New York Times Magazine, June 26, 1966.

performance items when increased in difficulty tend to become measures of special abilities rather than having any significant correlation with overall measures of intelligence.

In both pretesting and posttesting the modified Thematic Apperception Test produced so few responses that it was hardly worth the time it took to administer. Typical one-word or two-word responses were "wagon," "rabbit," "boys dancing," "going home," "buying horse," "boys crying," and "lost sheep." Although difficulties in speaking English no doubt contributed to the paucity of responses this is only a partial explanation since during the pretest period a Navajo speaking individual assisted in the test administration. It may be that this particular group of youngsters have had less experience in verbalizing than other Navajo children, or it may be that the children retreated to the bastions of monosyllabic responses as a way of avoiding a potentially anxiety creating situation. One fact, however, is clear even though the reasons are not known, the modified projective test provided no useful information concerning this particular group of children. Since Raven's Progressive Matrices were administered only in the posttest period it is not possible to evaluate its usefulness other than to agree with Dr. Furth and Dr. Youniss who used it during the posttest period, and felt that its appropriateness as a measurement of intellectual potential is worthy of further exploration and, if necessary, modification for use with Indian children.

In the following Tables the results of the pretest and posttest scores of the WISC, Goodenough-Harris Draw-A-Person pretest and posttest percentile rankings and Stanford Achievement Test scores are recorded along with gains and losses of the individual children. It should be pointed out that the Full Scale scores on the WISC were not calculated by the testing psychologists for reasons they explain in their overall evaluation of the testing instruments. It was, however, necessary to calculate the full scale scores because the pilot study design required pretest and posttest comparisons as a part of the evaluation of the testing instruments.

In addition to the Tables, sample copies of the Goodenough-Harris Draw-A-Person drawings are included in order to demonstrate the growth of the children.

TABLE III

GROSS SUMMARY

Pretest and Posttest Ranges, Averages, Gains, and Losses[1]

| | 1965 | 1966 | Gains | Losses | Comments |
|---|---|---|---|---|---|
| Total Number of Children | 56 | 47 | - | 9 | The difference between total Referral Group and Pilot Study Enrollment. |
| Sex Ratio | F/22-M/34 | F/17-M/30 | - | 7 | The difference represents the placement of 3 children in residential settings and 4 in public school. |
| Range in Chronological Age | 7.0/14.10 | 8.0/15.10 | 1 yr. | - | |
| Average Chronological Age | 12.06 | 13.06 | | | |
| Wechsler Intelligence Scale for Children | | | | | |
| Range in Full Scale scores | 45-111 | 47-133 | 4.6 | | Not statistically significant since 4.6 is well within the standard deviation. |
| Average in Full Scale scores | 68 | 72.33 | | | |
| Stanford Achievement Test Scores | | | | | |
| Range | 0-5.1 | 1.0/5.8 | 6-1/3 mos. | | |
| Goodenough-Harris Draw-A-Person (self) | | | | | |
| Average in Percentile Ranking | 79.10 | 134.70 | 55.60 | | |

[1]Figures on losses and gains are based on a comparison of test scores and percentile rankings of the test given in April 1965 and the same tests given in April 1966.

TABLE IV

| Name | D.O.B. | C.A. Apr.'66 | No. Yrs. In Sch. | Sex | Wechsler Intelligence Scale for Children Pretest and Posttest Scores 1965-1966 | | | | | | | | Goodenough-Harris (Self Drawing) | | | | Standard Achievement Test | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Verbal IQ | | Performance IQ | | Full Scale IQ | | Full Scale IQ | | Percentile Rank Goodenough-Harris (Self) | | | | Grade Level Battery Median | | | |
| | | | | | 1965 | 1966 | 1965 | 1966 | 1965 | 1966 | Gain | Loss | 1965 | 1966 | Gain | Loss | 1965 | 1966 | Gain | Loss |
| 1. C.A. | 12/15/52 | 13.4 | 7 | M | 70 | 55 | 99 | 110 | 82 | 80 | | -2 | 45 | 73 | 28 | | absent during test | | | |
| 2. P.B. | 4/ 2/55 | 11.0 | 4 | M | 66 | 58 | 107 | 97 | 84 | 75 | | -9 | 42 | 82 | 40 | | 1.3 | 1.6 | .3 | |
| 3. J.B. | 6/ 7/52 | 13.10 | 6 | F | 56 | 55 | 67 | 93 | 57 | 70 | 13 | | 39 | 39 | 0 | | 2.1 | 3.1 | 1.0 | |
| 4. J.B. | 3/22/54 | 12.1 | 6 | M | 56 | 63 | 78 | 85 | 63 | 71 | | -8 | 70 | 84 | 14 | | 1.6 | 2.5 | .9 | |
| 5. L.B. | 9/ 6/55 | 10.7 | 4 | M | 55 | 62 | 83 | 101 | 65 | 79 | 14 | | 63 | 81 | 18 | | 1.5 | 2.5 | 1.0 | |
| 6. L.B. | 8/19/54 | 11.8 | 5 | F | 45 | 45 | 69 | 80 | 58 | 54 | | -4 | 42 | 68 | 26 | | absent during test | | | |
| 7. R.B. | 10/20/54 | 11.6 | 5 | F | 45 | 45 | 55 | 69 | 46 | 48 | 2 | | 1 | 5 | 4 | | .6 | 1.1 | .5 | |
| 8. S.B. | 11/ 6/55 | 11.3 | 5 | F | 45 | 45 | 46 | 62 | 46 | 49 | 3 | | 3 | 1 | | -2 | 0 | 1.1 | 1.1 | |
| 9. E.B. | 9/30/51 | 14.6 | 8 | F | 62 | 77 | 122 | 121 | 90 | 133 | 43 | | 82 | 71 | | -11 | 5.1 | 5.8 | .7 | |
| 10. G.C. | 3/29/54 | 12.0 | 5 | F | 51 | 52 | 78 | 82 | 64 | 63 | | -1 | 2 | 32 | 30 | | 1.9 | 1.9 | 0 | |
| 11. T.D. | 12/19/55 | 8.4 | 4 | M | 50 | 63 | 89 | 99 | 62 | 72 | 10 | | 13 | 71 | 58 | | 1.0 | 2.0 | 1.0 | |
| 12. J.D. | 3/ 9/54 | 12.1 | 5 | M | 52 | 56 | 114 | 110 | 80 | 80 | 0 | | 95 | 98 | 3 | | 1.8 | 3.4 | 1.6 | |
| 13. T.E. | 10/24/52 | 13.6 | 5 | M | 45 | 47 | 76 | 89 | 54 | 64 | 10 | | 34 | 84 | 50 | | 1.3 | 2.3 | 1.0 | |
| 14. G.F. | 1/ 6/56 | 10.3 | 5 | M | 56 | 62 | 108 | 122 | 79 | 90 | 11 | | 86 | 97 | 11 | | 2.8 | 2.0 | | -.8 |
| 15. A.F. | 7/30/54 | 11.8 | 6 | M | 57 | 57 | 100 | 96 | 75 | 73 | | -2 | 45 | 75 | 30 | | 1.5 | 2.3 | .8 | |
| 16. L.G. | 5/ 7/54 | 11.11 | 4 | M | 58 | 51 | 79 | 85 | 65 | 56 | | -9 | 5 | 4 | | -1 | 1.6 | 2.3 | .7 | |
| 17. J.H. | 9/ 1/55 | 10.5 | 3 | M | 65 | 60 | 82 | 90 | 70 | 72 | 2 | | 50 | 71 | 21 | | 1.7 | 1.9 | .2 | |

TABLE IV (Continued)

| Name | D.O.B. | C.A. Apr.'66 | No. Yrs. In Sch. | Sex | Wechsler Intelligence Scale for Children Pretest and Posttest Scores 1965-1966 | | | | | | | | Goodenough-Harris (Self Drawing) | | | | Standard Achievement Test | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Verbal IQ | | Performance IQ | | Full Scale IQ | | Full Scale IQ | | Percentile Rank Goodenough-Harris (Self) | | | | Grade Level Battery Median | | | |
| | | | | | 1965 | 1966 | 1965 | 1966 | 1965 | 1966 | Gain | Loss | 1965 | 1966 | Gain | Loss | 1965 | 1966 | Gain | Loss |
| 18. L.H. | 3/25/54 | 11.7 | 4 | M | 58 | 60 | 92 | 99 | 72 | 76 | 4 | | 29 | 73 | 44 | | 1.2 | 1.9 | .7 | |
| 19. R.J. | 2/10/54 | 12.2 | 5 | F | 53 | 56 | 76 | 92 | 61 | 70 | 9 | | 23 | 34 | 11 | | 2.2 | 3.4 | 1.2 | |
| 20. H.W.J. | 5/15/55 | 11.11 | 5 | M | 50 | 57 | 83 | 97 | 62 | 74 | 12 | | 29 | 95 | 66 | | 2.0 | 2.8 | .8 | |
| 21. R.J. | 6/16/55 | 10.10 | 5 | M | 52 | 63 | 99 | 108 | 72 | 83 | 11 | | 25 | 39 | 14 | | 1.8 | 2.3 | .5 | |
| 22. W.J. | 6/ 1/55 | 10.10 | 6 | M | 62 | 66 | 90 | 94 | 73 | 77 | 4 | | 23 | 81 | 58 | | 1.4 | 2.1 | .7 | |
| 23. B.J. | 5/ 5/56 | 9.11 | 3 | F | 51 | 51 | 71 | 89 | 56 | 66 | 10 | | 3 | 23 | 20 | | 1.1 | 1.8 | .7 | |
| 24. L.J. | 6/ 1/53 | 12.10 | 5 | M | 45 | 55 | 85 | 78 | 60 | 62 | 2 | | 5 | 45 | 40 | | 1.8 | 2.1 | .3 | |
| 25. W.J. | 6/28/54 | 11.1 | 4 | M | 45 | 65 | 85 | 121 | 60 | 91 | 31 | | 47 | 75 | 28 | | 1.4 | 2.1 | .7 | |
| 26. H.L. | 2/24/54 | 12.1 | 5 | M | 52 | 46 | 106 | 108 | 75 | 73 | | -2 | 99 | 98 | | -1 | 1.9 | 3.3 | 1.4 | |
| 27. J.L. | 10/17/51 | 14.5 | 5 | F | 80 | 72 | 101 | 101 | 89 | 85 | | -4 | 13 | 71 | 58 | | 4.8 | 4.9 | .1 | |
| 28. R.L. | 1/ 8/52 | 14.3 | 5 | F | 85 | 91 | 97 | 115 | 90 | 103 | 13 | | 19 | 58 | 39 | | 4.6 | 5.8 | 1.2 | |
| 29. E.L. | 8/17/56 | 9.8 | 3 | F | 58 | 63 | 103 | 101 | 77 | 80 | 3 | | 27 | 63 | 36 | | .1 | 1.9 | 1.8 | |
| 30. L.McR. | 7/ 8/50 | 15.9 | 7 | F | 47 | 60 | 67 | 94 | 52 | 74 | 22 | | 7 | 23 | 16 | | 4.0 | 4.8 | .8 | |
| 31. H.M. | 5/15/55 | 10.11 | 4 | M | 50 | 53 | 76 | 93 | 59 | 70 | 11 | | 9 | 53 | 44 | | 1.8 | 2.1 | .3 | |
| 32. A.N. | 6/13/53 | 12.10 | 5 | F | 45 | 45 | 72 | 82 | 54 | 57 | 3 | | 32 | 63 | 31 | | 1.3 | 1.5 | .2 | |
| 33. F.P. | 5/ 1/55 | 10.11 | 2 | M | 45 | 45 | 61 | 69 | 46 | 47 | 1 | | 3 | 5 | 2 | | absent during test | | | |
| 34. P.P. | 2/ 3/55 | 11.2 | 5 | M | 63 | 62 | 97 | 93 | 77 | 75 | | -2 | 34 | 98 | 64 | | 1.9 | 2.4 | .5 | |

TABLE IV (Continued)

| Name | D.O.B. | C.A. Apr.'66 | No. Yrs. In Sch. | Sex | Wechsler Intelligence Scale for Children Pretest and Posttest Scores 1965-1966 Verbal IQ 1965 | Verbal IQ 1966 | Performance IQ 1965 | Performance IQ 1966 | Full Scale IQ 1965 | Full Scale IQ 1966 | Full Scale IQ Gain | Full Scale IQ Loss | Goodenough-Harris (Self Drawing) Percentile Rank Goodenough-Harris (Self) 1965 | 1966 | Gain | Loss | Standard Achievement Grade Level Battery Median 1965 | 1966 | Gain | Loss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35. T.P. | 10/15/52 | 13.5 | 7 | F | 51 | 57 | 79 | 86 | 61 | 90 | 29 | | 18 | 47 | 29 | | 2.7 | 2.8 | .1 | |
| 36. P.R. | 5/21/52 | 13.10 | 7 | M | 53 | 62 | 86 | 111 | 66 | 84 | 18 | | 25 | 47 | 22 | | 3.9 | 4.1 | 0.2 | |
| 37. D.S. | 10/10/52 | 13.5 | 6 | M | 52 | 56 | 72 | 90 | 59 | 73 | 14 | | 23 | 58 | 35 | | 3.2 | 2.2 | | -1.0 |
| 38. M.R.S. | 10/ 6/53 | 12.6 | 6 | F | 45 | 45 | 75 | 85 | 54 | 59 | 5 | | 2 | 4 | 2 | | 1.3 | 2.3 | 1.0 | |
| 39. H.S. | 9/25/50 | 15.7 | 9 | M | 45 | 47 | 80 | 92 | 58 | 65 | 7 | | 93 | 93 | 0 | | 3.4 | 3.9 | .5 | |
| 40. L.M.T. | 11/ 2/56 | 9.5 | 5 | F | 66 | 61 | 116 | 99 | 88 | 68 | | -20 | 14 | 88 | 74 | | 2.2 | 2.6 | .4 | |
| 41. C.T. | 7/29/54 | 11.8 | 5 | M | 45 | 45 | 67 | 72 | 46 | 52 | 6 | | 2 | 14 | 12 | | 1.4 | 1.0 | | - .4 |
| 42. L.S.T. | 11/20/52 | 13.5 | 5 | M | 45 | 45 | 72 | 76 | 52 | 54 | 2 | | 5 | 27 | 22 | | 1.3 | 1.9 | .6 | |
| 43. J.W. | 1/20/53 | 13.2 | 6 | M | 55 | 56 | 80 | 87 | 71 | 68 | | - 3 | 16 | 39 | 23 | | 2.0 | 3.1 | 1.1 | |
| 44. L.W. | 2/13/50 | 15.2 | 9 | F | 48 | 66 | 68 | 100 | 54 | 80 | 26 | | 14 | 27 | 13 | | 5.1 | 5.2 | .1 | |
| 45. J.Y. | 7/23/54 | 11.8 | 6 | M | 53 | 56 | 69 | 72 | 57 | 60 | 3 | | 53 | 55 | 2 | | 1.8 | 2.6 | .8 | |
| 46. R.Y. | 5/15/51 | 14.11 | 7 | M | 47 | 47 | 106 | 108 | 72 | 75 | 3 | | 90 | 75 | | -15 | 3.4 | 3.6 | .2 | |
| 47. T.Y. | 4/ 5/52 | 14.0 | 6 | M | 62 | 57 | 97 | 99 | 77 | 75 | | - 2 | 84 | 88 | 4 | | 2.1 | 3.1 | 1.0 | |

[redacted]

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22

PRETEST

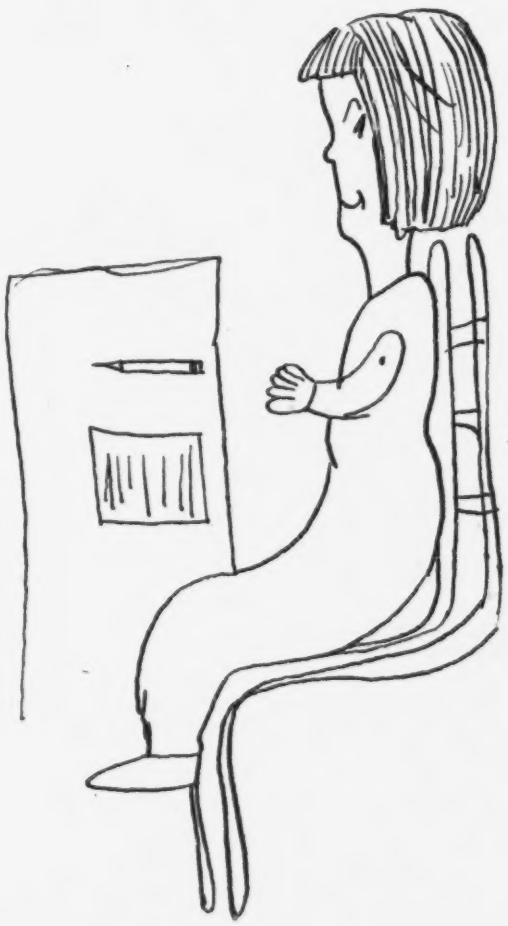
L.M.T. Ap. 1965 Ca 8-5

Raw Score: 22

MAKE YOUR THIRD DRAWING HERE

(2)

Draw a picture of yourself. Make the very best picture you can.
Be sure to make your whole self, not just your head and shoulders.



POSTTEST

L.M.T. April-1966 Ca 9-5

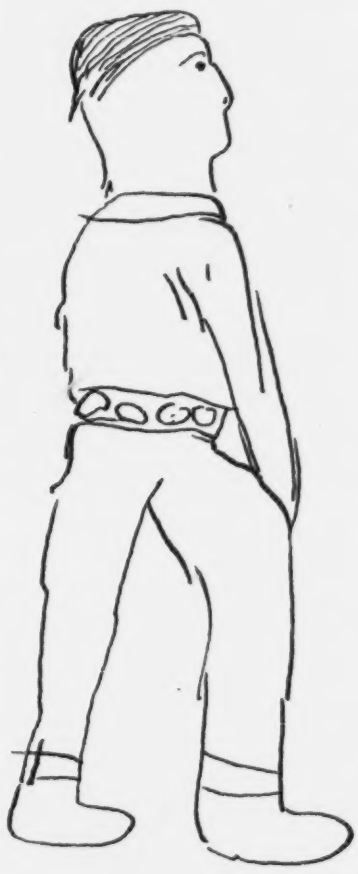
| | | | |
|---|---|---|---|
| 1. | + | 36. | + |
| 2. | + | 37. | 0 |
| 3. | + | 38. | 0 |
| 4. | + | 39. | 0 |
| 5. | + | 40. | + |
| 6. | + | 41. | + |
| 7. | + | 42. | + |
| 8. | 0 | 43. | 0 |
| 9. | + | 44. | + |
| 10. | + | 45. | 0 |
| 11. | 0 | 46. | + |
| 12. | 0 | 47. | 0 |
| 13. | + | 48. | + |
| 14. | 0 | 49. | 0 |
| 15. | 0 | 50. | 0 |
| 16. | 0 | 51. | + |
| 17. | + | 52. | + |
| 18. | 0 | 53. | + |
| 19. | + | 54. | + |
| 20. | + | 55. | + |
| 21. | + | 56. | + |
| 22. | + | 57. | 0 |
| 23. | 0 | 58. | + |
| 24. | + | 59. | + |
| 25. | + | 60. | 0 |
| 26. | + | 61. | 0 |
| 27. | 0 | 62. | + |
| 28. | + | 63. | + |
| 29. | + | 64. | + |
| 30. | + | 65. | 0 |
| 31. | 0 | 66. | + |
| 32. | + | 67. | 0 |
| 33. | + | 68. | + |
| 34. | + | 69. | 0 |
| 35. | + | 70. | 0 |
| | | 71. | + |
| | | 72. | ___ |
| | | 73. | ___ |

Raw Score 46

MAKE YOUR THIRD DRAWING HERE

(2)

Draw a picture of yourself. Make the very best picture you can.
Be sure to make your whole self, not just your head and shoulders.



PRETEST

H.W.J. April-65 Ca 11-11

| | | | |
|---|---|---|---|
| 1. | ✓ | 36. | ✓ |
| 2. | ✓ | 37. | 0 |
| 3. | ✓ | 38. | 0 |
| 4. | ✓ | 39. | ✓ |
| 5. | ✓ | 40. | 0 |
| 6. | 0 | 41. | 0 |
| 7. | 0 | 42. | 0 |
| 8. | 0 | 43. | 0 |
| 9. | ✓ | 44. | ✓ |
| 10. | ✓ | 45. | 0 |
| 11. | 0 | 46. | ✓ |
| 12. | 0 | 47. | ✓ |
| 13. | 0 | 48. | ✓ |
| 14. | ✓ | 49. | 0 |
| 15. | 0 | 50. | ✓ |
| 16. | ✓ | 51. | ✓ |
| 17. | ✓ | 52. | 0 |
| 18. | ✓ | 53. | 0 |
| 19. | ✓ | 54. | 0 |
| 20. | 0 | 55. | ✓ |
| 21. | 0 | 56. | 0 |
| 22. | 0 | 57. | 0 |
| 23. | 0 | 58. | 0 |
| 24. | 0 | 59. | 0 |
| 25. | 0 | 60. | ✓ |
| 26. | 0 | 61. | 0 |
| 27. | 0 | 62. | ✓ |
| 28. | 0 | 63. | ✓ |
| 29. | 0 | 64. | 0 |
| 30. | ✓ | 65. | 0 |
| 31. | ✓ | 66. | ✓ |
| 32. | 0 | 67. | ✓ |
| 33. | 0 | 68. | 0 |
| 34. | 0 | 69. | 0 |
| 35. | ✓ | 70. | 0 |
| | | 71. | 0 |
| | | 72. | 0 |
| | | 73. | 0 |

Raw Score 29

MAKE YOUR THIRD DRAWING HERE

(1)

Draw a picture of yourself. Make the very best picture you can.
Be sure to make your whole self, not just your head and shoulders.

POSTTEST

H.W.J. April '66 Ca 12-12

| | | | |
|---|---|---|---|
| 1. + | 36. + | 71. 0 | |
| 2. + | 37. 0 | 72. + | |
| 3. + | 38. 0 | 73. 0 | |
| 4. + | 39. + | | |
| 5. + | 40. + | | |
| 6. 0 | 41. + | | |
| 7. 0 | 42. 0 | | |
| 8. 0 | 43. + | | |
| 9. + | 44. + | | |
| 10. + | 45. + | | |
| 11. + | 46. + | | |
| 12. 0 | 47. + | | |
| 13. 0 | 48. + | | |
| 14. + | 49. + | | |
| 15. + | 50. + | | |
| 16. + | 51. 0 | | |
| 17. + | 52. + | | |
| 18. + | 53. + | | |
| 19. + | 54. + | | |
| 20. + | 55. + | | |
| 21. + | 56. + | | |
| 22. + | 57. + | | |
| 23. + | 58. + | | |
| 24. 0 | 59. + | | |
| 25. 0 | 60. 0 | | |
| 26. 0 | 61. 0 | | |
| 27. 0 | 62. + | | |
| 28. + | 63. + | | |
| 29. 0 | 64. + | | |
| 30. + | 65. + | | |
| 31. + | 66. + | | |
| 32. + | 67. + | | |
| 33. + | 68. + | | |
| 34. + | 69. + | | |
| 35. + | 70. + | | |

Raw Score 55

MAKE YOUR THIRD DRAWING HERE

(1)

Draw a picture of yourself. Make the very best picture you can.
Be sure to make your whole self, not just your head and shoulders.

PRETEST

P.P. April 1965 Ca 11-2

| | | | |
|---|---|---|---|
| 1. | ✓ | 36. | ✓ |
| 2. | 0 | 37. | 0 |
| 3. | 0 | 38. | 0 |
| 4. | ✓ | 39. | ✓ |
| 5. | ✓ | 40. | ✓ |
| 6. | 0 | 41. | ✓ |
| 7. | ✓ | 42. | 0 |
| 8. | 0 | 43. | 0 |
| 9. | ✓ | 44. | ✓ |
| 10. | ✓ | 45. | 0 |
| 11. | ✓ | 46. | ✓ |
| 12. | 0 | 47. | ✓ |
| 13. | 0 | 48. | 0 |
| 14. | ✓ | 49. | 0 |
| 15. | ✓ | 50. | 0 |
| 16. | 0 | 51. | 0 |
| 17. | ✓ | 52. | 0 |
| 18. | ✓ | 53. | 0 |
| 19. | ✓ | 54. | 0 |
| 20. | 0 | 55. | ✓ |
| 21. | 0 | 56. | ✓ |
| 22. | ✓ | 57. | 0 |
| 23. | 0 | 58. | 0 |
| 24. | 0 | 59. | 0 |
| 25. | 0 | 60. | ✓ |
| 26. | 0 | 61. | 0 |
| 27. | 0 | 62. | 0 |
| 28. | 0 | 63. | ✓ |
| 29. | 0 | 64. | ✓ |
| 30. | 0 | 65. | 0 |
| 31. | 0 | 66. | 0 |
| 32. | 0 | 67. | 0 |
| 33. | 0 | 68. | 0 |
| 34. | 0 | 69. | 0 |
| 35. | ✓ | 70. | 0 |
| | | 71. | 0 |
| | | 72. | 0 |
| | | 73. | ✓ |

Raw Score 27

MAKE YOUR THIRD DRAWING HERE

2

Draw a picture of yourself. Make the very best picture you can.
Be sure to make your whole self, not just your head and shoulders.

POSTTEST

P.P. April 1966 Ca 12-2

| | | | |
|---|---|---|---|
| 1. + | 36. + | 71. + |
| 2. 0 | 37. + | 72. + |
| 3. 0 | 38. + | 73. + |
| 4. + | 39. + | |
| 5. 0 | 40. + | |
| 6. 0 | 41. + | |
| 7. + | 42. + | |
| 8. 0 | 43. + | |
| 9. + | 44. + | |
| 10. + | 45. + | |
| 11. + | 46. + | |
| 12. + | 47. + | |
| 13. + | 48. + | |
| 14. + | 49. 0 | |
| 15. + | 50. + | |
| 16. 0 | 51. + | |
| 17. + | 52. + | |
| 18. + | 53. + | |
| 19. + | 54. + | |
| 20. + | 55. + | |
| 21. 0 | 56. + | |
| 22. + | 57. 0 | |
| 23. + | 58. 0 | |
| 24. + | 59. 0 | |
| 25. + | 60. + | |
| 26. + | 61. 0 | |
| 27. + | 62. 0 | |
| 28. + | 63. + | |
| 29. + | 64. + | |
| 30. + | 65. + | |
| 31. + | 66. + | |
| 32. + | 67. + | |
| 33. + | 68. + | |
| 34. + | 69. + | |
| 35. + | 70. + | |

Raw Score 60

## Recommendations, Suggestions, and Conclusions

Since the purpose of a pilot study is essentially to explore a possible solution(s) to a given problem, the first question to be asked in evaluating the results may be formulated as follows: Does the overall strategy and techniques of identification and selection of the subject population justify their continued use in solving the problem as defined in this particular study? If not, what suggestions can be made as to other possible solutions?

The problem, as originally defined, was as follows: Since the pilot study is to take place on the Navajo Reservation, most of the children enrolled in school are educationally retarded due to cultural, social, and linguistic factors. The particular problem is to establish identification and selection criteria by which an interdisciplinary staff is able to select out of this total population those youngsters who, in addition to academic and social retardation, also demonstrate evidence of having "... inadequately developed intelligence ... to the degree that they are significantly impaired in their ability to adapt to the demands of society ..."[1]

Out of the total number of children referred, the interdisciplinary staff agreed that 50 children did demonstrate in varying degrees, evidence of inadequately developed intelligence. The identification and selection criteria utilized in classifying a child as retarded or slow learning were as follows:

1. A history of slow development in comparison with siblings and a feeling on the part of the child's parents that he is "different" from the other children. ("X takes longer to do chores," "cries a lot," " acts like a baby.")

2. A postmedical history of, for example, head injuries, seizures, and acute infectious diseases with high fever.

3. An abnormal electroencephalogram and positive neurological findings.

4. Difficulties in responding correctly to simple directions during neurological and pediatric examinations.

5. Evidence of depressed intellectual functioning on all five of the testing instruments.

6. A medical impression compatible with mental retardation.

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[1]Definition of mental retardation: Report of President's Panel on Mental Retardation, 1964.

7. A family constellation with "slow" or mentally retarded members.

8. Two or more years underachievement in school and the teacher's feeling that the child might be retarded or slow learning.

It should be pointed out that no one of the above criteria was used as a primary classificatory device but rather a combination or pattern of responses. An abnormal EEG or subnormal scores on the intelligence tests were not, for example, considered as being particularly meaningful unless they were found in association with a compatible social and past medical history and the results of the medical and paramedical examinations supported an impression of subnormal functioning. In three cases the degree of retardation was so severe, the child so disturbed and the home situation so inadequate it was agreed that the youngsters would profit more from institutional care than they would from an academic placement. The remaining 47 youngsters were judged to be educable and assigned to the special program.

Had the pilot study terminated at that point, there would have been no doubt in the minds of the pilot study staff that the identification and selection criteria combined with an interdisciplinary approach provided at least one workable solution to the identification of mentally retarded Navajo children. Fortunately, the design of the study provided for a posttest period after one academic year in a special program. Once the results of the posttesting were completed it became apparent that the general level of intelligence of approximately half (21) of the youngsters was evaluated as being average and above. The simplest explanation would be to suggest that the interdisciplinary staff made 21 errors in diagnostic impressions and 27 correct classifications. This hardly seems reasonable when one realized it would mean that the results of a battery of five psychological tests, pediatric and neurological examinations, speech and hearing evaluations, and social and past medical histories, were <u>all</u> inaccurate in the same 21 cases and <u>all</u> correct in 27 cases.

In exploring this problem further it appears that the definitions and classificatory system established by the American Association on Mental Deficiency[1] provides a much more meaningful explanation insofar as the increase in the general intelligence of a number of pilot study children is concerned.

The AAMD defines mental retardation as follows: "Mental retardation refers to subaverage in general intellectual functioning which originates during the developmental period and is associated with impairment in adaptive behavior." Further clarification of the above definition is provided by the authors who define the germinal terms as follows:

> <u>Subaverage</u> refers to a performance which is greater than one Standard Deviation below the population mean of the age group involved on

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[1]Rick Heber, "Manual on Terminology and Classification in Mental Retardation," <u>A Monograph Supplement to the American Journal of Mental Deficiency</u>, 2nd edition, 1961.

> measures of general intellectual functioning. Level of general intellectual functioning may be assessed by performance on one or more of the various objective tests... Though the upper age limit of the developmental period cannot be specified precisely, it may be regarded for practical purposes as being approximately sixteen years... Impairment in adaptive behavior refers primarily to the effectiveness of the individual in adapting to the natural and social demands of his environment. Impaired adaptive behavior may be reflected in: (1) maturation, (2) learning, and/or (3) social adjustment. These three aspects of adaptation are of different importance as qualifying conditions of mental retardation for different age groups...[1]

Of the eight etiologic groupings used in the AAMD's classificatory system Number VIII "Mental Retardation Due to Uncertain (or Presumed Psychologic) Cause with the Functional Reaction Alone Manifest," Subclassification Code No. 82, "Psychogenic mental retardation associated with environmental deprivation" would seem to be a correct classification for those 21 children no longer functioning as mentally regarded by the end of the academic phase of the pilot study.

For example, within the framework of the above definition, mental retardation is a term descriptive

> ... of the current status of the individual with respect to intellectual functioning and adaptive behavior. Consequently an individual may meet the criteria of mental retardation at one time and not at another. A person may change status as a result of changes in social conditions, or as a result of changes in efficiency of intellectual functioning, with the level of efficiency always being determined in relation to the behavioral standards and norms for the individual's particular age group ...[2]

A partial description of Classification Number VIII, Subclassification Code No. 82 is as follows:

> In some instances borderline or mild degree of mental retardation may be attributable to deprivation at an early age of opportunity for learning experiences which are essential for adequate functioning in our culture. Intellectual and social functioning are intimately related to previous learning experiences. With severe deprivation of stimulation at early age levels an individual may not acquire the knowledge and skills that will enable him to function at the level demanded by the culture. Thus, the individual's level of functioning may fall within the range of the mentally retarded...

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[1] Ibid., p. 1.

[2] Ibid., p. 3.

> The retardation in these cases is particularly relative to the demands and norms set by the culture and will almost be of a minimal or marginal degree...[1]

If the above interpretation of the discrepancy between pretest and posttest data is correct, then it is safe to say that insofar as the pilot study's solution to the problem of identification of mentally retarded Indian children is concerned--the study was successful in the identification and selection of children currently functioning as mentally retarded. What needs to be emphasized is that in some cases a classification of mental retardation was subject to change and second, it does not appear at all feasible to assume at this point in time that an interdisciplinary staff, no matter how experienced and well trained, can predict which individuals in a group of mentally retarded Indian children are "situational" retardates and which are retarded as a result of damage, dysfunction, or disease. If one accepts the validity of the above observations then it is reasonable to suggest that in any future plans for the identification and education of mentally retarded and slow learning Indian children it is imperative to provide for intensive testing of the youngsters at the end of their first year in a special class and for as many additional years as there continues to be substantive evidence of continued growth in conceptual maturity and general intellectual functioning.

In the preceding discussion, we have been concerned with whether or not the pilot study fulfilled its immediate purpose and long-range goals. In the following section of the report, each of the five phases will be discussed from the standpoint of increasing efficiency at the operational level.

## PHASE I

Gross screening for children using a teacher referral form to identify children whom the teachers knew or suspected of being mentally retarded in addition to their other problems.

Discussion: While the particular forms utilized in the pilot study did provide an appropriate subject population, it now makes more sense to revise the form in such a way that it becomes a screening technique for the identification of underachieving children with specific learning and behavior disorders rather than attempting to specify the nature of the handicap.

The advantage of the revised form is that it leaves the task of a diagnostic classification up to the examining staff and the results of a posttest period after a period of time in a special program. Provision in the revised form is made for comments of the dormitory staff concerning the out-of-school behavior of the child, a record of illness, absences without leave, parental visits and any special problems with peers and adults.

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[1]Rick Heber, "Manual on Terminology and Classification in Mental Retardation," A Monograph Supplement to the American Journal of Mental Deficiency, 2nd edition, 1961.

One of the most important procedural aspects of the use of the teacher referral form is its timing. In this particular study the screening was begun too late in the academic year to leave time for the preparation of a behavioral profile based on the referring teacher's estimate of the children's difficulties. In the future, plans to use a teacher referral form as a screening device should ensure that the forms are in the hands of the teachers no later than March or April of any given year. Failure to meet this initial scheduling will delay completing the screening phase anywhere from two to four months due to the interruption of summer vacations.

## PHASE II

Preparation of individual behavioral profiles on the referral group, home visit and preparation of social histories, and preparation of the cumulative folders for use by the medical and clinical staff.

Discussion: Although this phase is divided into two operations, it is very important to keep to the sequence outlined above. The behavioral profile is the only data that social workers making a home visit have from school personnel which can be used in explaining to parents why their child's academic performance is a source of concern.

There was unaminous agreement on the part of the medical and paramedical staff that the social histories were the single most important piece of data in arriving at an evaluation of a child's problem(s). We would stress, however, that the home visit and writeup of a social history is also the most time consuming if the parents of the referral population live in geographically isolated areas. In the case of the pilot study the home visits and preparation of the social histories on 56 children required approximately 650 hours of work over and beyond the normal work load of the BIA Welfare staff.

In the future, we would strongly recommend that every effort should be made to provide additional staff, both professional and clerical, during that period of time social histories are being written up on the referral population. If this is absolutely impossible then the operational schedule should allow at least 8 months per every 50 children for home visits and preparation of social histories.

We would also suggest that any referral group being worked up who are not located on the Navajo Reservation should benefit from the experience of the BIA social workers in the Shiprock Agency. This suggestion is made for the following reason. The social history so useful to the medical and paramedical diagnostic staff was developed in cooperation with the medical staff and is different in form and content from the standard type of interviewing and reporting. A brief training period would be extremely useful to social workers unfamiliar with this particular type of social history.

Copies of the past medical history of Indian children, if available, will be located in the nearest U. S. Public Health Indian Hospital, and in some cases current medical problems will be noted in the child's health folder kept by the dormitory staff when a child is attending a BIA boarding school.

## PHASE III

Medical and paramedical examinations of the referral group.

Discussion: We would recommend that the approach to the problem of identification of handicapping conditions be interdisciplinary and that the composition of the staff include a pediatrician, neurologist, psychologist, audiologist and social worker. Although many reputable physicians feel that the routine use of electroencephalograms, particularly with young children is uncalled for since the results are frequently equivocal even to the point of being misleading, (evidence of pathology is often a transitory phenomenon), we would still recommend inclusion of routine EEG's for the following reason:

In the small group of youngsters included in the subject population of the pilot study, 53 had EEG's, 28 of which were abnormal. Evidence of abnormal electrical activity did not, except in a few cases, appear in association with clinical or historical evidence of central nervous system damage. This finding was of sufficient interest to the diagnostic staff that preliminary plans were made to initiate a study of EEG's of a normal population matched by age and sex with the pilot study children. Unfortunately, the study was not implemented at that time which reinforces the need for more adequate information on the possible relationship between abnormal EEG's and learning and behavior disorders among underachieving Indian children.

In addition to the need for more EEG data on this particular group of Indian children, it should also be pointed out that there is a growing body of research data which suggests that at least some of the deviant or unusual electrical activity among EEG's of children which has been considered as having no particular clinical significance, is now open to suspicion.

For example, Dr. Robert Cohn, in reporting the results of one of his studies,[1] states that "... it is concluded that occipital slow activity cannot categorically be considered a benign phenomena in children .... there is good evidence that persistent slow waves are representative of retarded physiological maturation processes of the brain ..."

After evaluating the predictability, reliability, and appropriateness of the psychological test battery used in the diagnostic phase of the pilot study, it was generally agreed that until such time as normative data becomes available on Navajo children, the results of currently available testing instruments must be viewed with extreme caution, particularly in the absence of supporting data from other disciplines.

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[1]Robert Cohn, "The Significance of Bioccipital Slow Wave Activity in the Electroencephalograms of Children" at the American Electroencephalographic Society Meeting, June 1958.

Since an extensive discussion of the testing instruments and the results of the pretesting and posttesting have been discussed in an earlier section of the report, no additional comments seem necessary.

## PHASE IV

Staffing of individual children for the purpose of arriving at a consensus as to the nature of handicapping conditions.

Discussion: The only recommendation we would make concerning this phase of the project is that if an interdisciplinary approach to the problem of identification of children with specific learning disorders continues to be used then the staffing of the children by members of the diagnostic staff should become an established policy.

## PHASE V

Instructional Program, special class organization, teacher-training and supervision.

Discussion: Because flexibility in programing for atypical Indian children appears to be of extreme importance in meeting their changing academic and social needs, we would stress the importance of locating special classes in regular boarding schools of the BIA rather than setting up a special school. We would also suggest that a ratio of 4 special classes with a total enrollment of no more than 60 special program students per 500 regular program students is a wise precaution, particularly in the beginning stages of a special program. This ratio of special classes and regular classes avoids overloading a given school with children whose social, emotional, and academic needs--if they are to be met--require much more individualized help from the school staff than is normally available.

We also would suggest that once a school has been selected to provide a special education program that the staffing pattern be expanded to provide the following additional personnel:

1. A special education supervisor trained and experienced in educational diagnosis of specific learning disorders and familiar with specialized teaching techniques and methods. Her responsibilities would be to include evaluation of the academic and social progress--or lack of it--in individual children; to assist the special teachers in establishing grouping criteria in line with the changing needs of the total enrollment; to act as a liaison with Indian Health personnel and social workers from the BIA, Branch of Welfare; to act as an assistant to the school principal in resolving problems of policy and procedure which are a part of the normal increment of administrative responsibilities when special education programs are first initiated.

2. A remedial reading teacher experienced and trained in the diagnosis of such specific reading disorders as aphasia and dyslexia, who is also familiar with the specialized techniques which have been developed for remedial work with central language disorders.

3. The service of a speech and hearing therapist.

4. A clinical psychologist should be available to a school with special education programs.

5. If the special program children are fairly evenly matched in sex ratios, two additional teacher guidance positions should be made available, one for the girls' dormitory and one for the boys.

The above suggested staffing pattern for schools housing four special classes is based on the assumption that once the diagnostic studies have been completed on a group of 50-60 underachieving children they will be routinely scheduled to a given school for a year's diagnostic teaching. Once their first year in a special program is completed they would then be retested and reevaluated by the diagnostic and school staff and reassigned to appropriate school settings, or remain in the original placement, whichever best meets the child's needs. In this case each of the accepting schools would require the same kind of staffing pattern since the referral group would represent a wide range of problems.

An alternate suggestion, not to be disregarded because of its initial cost, would be the establishment of a diagnostic center manned by a permanent staff which would act as a referral center. In this case it would make sense to consider the possibility of establishing centers for specific learning disorders in schools interested in special education programs. For example, school "X" would be designated as a teaching center for children with speech, hearing, and visual handicaps.

In the absence of other handicapping conditions, youngsters with these particular disabilities could be enrolled in the regular classes and receive the speech and/or hearing therapy on a regularly scheduled basis. In this case, the school's staffing pattern would require the addition of a speech and hearing therapist and remedial reading teacher but not special class teachers, teacher aids, and additional dormitory personnel.

A second school or schools might well be designated as a center(s) for slow learning and mentally retarded children while a third might well have one or more classrooms adapted for physically handicapped youngsters. In each case, the school staffing pattern would be adjusted to provide the specific type of professional personnel required to meet the needs of specific disabilities.

At the operational level the proposed diagnostic center might well function as follows: Let us assume that such a center is established on the Navajo Reservation to serve the Southwest Indians. Theoretically, its facilities would include (1) examination rooms and equipment for a medical staff, (2) four or more classrooms for diagnostic teaching as well as space and equipment for psychological testing, remedial reading, and speech and hearing therapy,

(3) conference rooms, (4) a data processing unit, (5) dormitory space for the children during the period of time they are being worked up by the diagnostic staff and while they are enrolled in the diagnostic teaching program, and (6) it would also be helpful, although not essential, to have some type of living quarters for parents to stay during that period of time their child is being evaluated.

Ideally, the permanent full-time interdisciplinary staff should be drawn from the following sources: (1) the U.S. Public Health Service, Division of Indian Health, (pediatrics, psychiatry, neurology, electroencephalograph technician, ophthalmologist, nurse, driver-interpreter, and medical secretary), (2) the Bureau of Indian Affairs, Branch of Welfare, (social workers, secretarial help and driver-interpreter), (3) Division of Education, (four classroom teachers, two teacher aids, a special education supervisor, speech and hearing therapist, remedial reading teacher, school psychologist, school secretary, dormitory staff, a program coordinator and school principal). Also the center should have personnel trained in the techniques of data processing.

Teacher screening of underachieving children with learning and behavior disorders would become a routine matter at the second grade and include all youngsters who had been enrolled two or more years whose rate of academic and social progress was not comparable to that of his peers. This group of children would automatically be referred to the diagnostic center for study and evaluation by the interdisciplinary staff. In addition to the routine second grade screening, any child, regardless of his age and number of years in school, whose teacher felt he was not responding favorably to the instructional situation could be referred to the diagnostic center. If routine referral at the second grade became an established policy then one could assume that there would be fewer and fewer referrals of older children and eventually the staff could anticipate a fairly predictable number of yearly referrals for whom plans could be made.

Based on the results of the pilot study referral population, one might expect to find the following general kinds of disabilities:

1. Previously undetected medical disorders which can be brought under control, or eliminated, by proper medical management. Unless there are long standing secondary problems, children in this category would presumably be returned to the referring school once arrangements had been completed for whatever treatment program was recommended by the examining physicians.

2. Children with speech, hearing, and/or visual disorders unaccompanied by other handicapping conditions. Following the diagnostic studies this group of youngsters might very well profit from a period of time in the center's diagnostic teaching classes where a careful instructional analysis could be made of the learning problems and an appropriate program of therapy worked out for the receiving school's speech and hearing therapist. This suggestion is made because of the extraordinary complexity of central language disorders and the developmental problems of

language formulation among children with impaired hearing and speech disorders.

In the case of children whose auditory and speech problems are found in association with mental retardation, the youngsters would certainly profit from a year in the diagnostic teaching center followed by a complete reevaluation. If at that point the primary problem appears to be in the area of speech and hearing and the retardation minimal, the youngsters would be enrolled in a regular program in a school with a speech and hearing staff. If the retardation remained a primary problem, the children should be transferred out of the diagnostic center to a school with classes for slow learners and a speech therapist on its regular teaching staff.

The proposed diagnostic center would at no time be permitted to become institutionalized as a special school for special children. Its primary purpose as an institute for interdisciplinary educational research would be safeguarded at all times against the community and administrative pressures which would see such a facility as a place to "unload" their problems permanently. In order to avoid this possibility, it would be necessary to prohibit any child remaining in the center any longer than is absolutely necessary to complete the diagnostic studies.

In addition to functioning as outlined above, the proposed diagnostic center with its permanent interdisciplinary staff would be an excellent facility in which to house special education teacher training programs and workshops. Certain types of research projects such as the one on electroencephalographic studies on normal, nonhandicapped Navajo children mentioned earlier in this report could be initiated, directed, and the findings analyzed within such a facility. The crying need to obtain reliable normative data on growth gradients and maturation patterns among Indian children could become an ongoing longitudinal study in such a setting. Problems of the development and modification of testing instruments appropriate to Navajo children could be worked through as could the need for special education curriculum appropriate to the needs of the exceptional Indian child.

In concluding this addendum we would stress above all else the need to move into overall programing for exceptional children. The pilot study has served its purpose well. It has established guidelines and procedures for the identification and education of children with handicapping conditions which are appropriate to the implementation of an overall program. While it would require massive expenditure of funds for the first year because of currently unmet needs, in time the number of children needing diagnostic studies and special education would become a predictable percentage of children enrolling in school for the first time. To those who would say that such a plan is financially unwise, even though recognized as theoretically sound, we would suggest that

.... inventive solutions promising high probability of success are better than the status quo which is patently inadequate. Reasonable

risks and attractive hypotheses are an essential part of life, of social engineering, and of educational change ...[1]

[1]"Planning for Educational Change," Theory into Practice, Vol. V, No. 1, College of Education, Ohio State University, Columbus, Ohio, 1966.

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# APPENDIX

INSTITUTE FOR THINKING AND LANGUAGE
CATHOLIC UNIVERSITY, WASHINGTON, D. C.
Dr. James Youniss and Dr. Hans Furth

## General Considerations Related to the Education of Navajo Children

The following considerations are presented not in a spirit of criticism, but in order possibly to suggest new avenues towards the problem of low scholastic achievement of Indian children. It should be prefaced by saying that the writer's familiarity with Navajo people is based on a short stay at a boarding school and on impressions and conversation with people while there. His information on the situation of the Navajo children may perhaps be incomplete or even faulty. However, the general psychological principles on which these considerations are based, are offered as guidelines that have been found relevant in a variety of educational settings.

As far as education is concerned, knowledge of the English language appears to be a major problem. It is a rare Indian child, particularly at a younger age level, who is as comfortably at home in the English language as thousands of average American youngsters of comparable age. These same children, on the other hand, master their own society's language, i.e., Navajo. It behooves us to ask the reason why it is so hard for Navajo children to become proficient in the English language.

Clearly, intellectual capacity or lack of it is not an adequate explanation. The learning of any language requires no greater intellectual level than that of a 3- or 4-year-old. Any 4-year-old child (with some extremely rare exceptions) will pick up spontaneously a first or second language to which he is exposed. The older a child gets the less likelihood there is of ultimate success.

Navajo is a language that is phonetically and structurally much farther from English than is any other European language. It is also a language that is rarely written so that books, newspapers, etc. do not normally exist in the Navajo language.

Moreover, observation of the oral language behavior of Navajo children may reveal that the attitude towards language is quite different in Navajo families as compared to American families. It is said that Navajo children do not easily engage in conversation with adults. If asked a question by an elder, this question will be related to a concretely meaningful situation which the child is assumed to be familiar with, and the child will only answer if he is certain of what he is saying.

It would seem that a thorough study of these two points is in order for anyone engaged in teaching English as a second language to Navajo children. We should note the main structural differences between the languages, and we should note the differences in linguistic behavior. To present to a 6-year-old

Navajo child a primer that is suitable to a white American child is probably not the best procedure. Nowadays courses are given in how best to teach a foreigner English, e.g., English to a Japanese. Such courses take account of the special points mentioned above and in this way the English teaching becomes more effective than if the same language teaching method were uniformly applied to any foreign culture.

However, formal language teaching is a different psychological process from informal exposure. Exposure within a familiar setting works almost automatically if it takes place early enough; formal language learning as a school subject pre-supposes at least a high motivation on the part of the learner.

Educators of the Navajo children should clearly decide which of the two methods they wish to pursue. As to the likelihood of ultimate success, there can be no hesitation between these two alternatives. An effort towards informal exposure to English at ages 3 or 4 is more valuable than an effort of a similar duration at, say, ages 10 and 11, and this is even more true at later ages.

It would seem to be money well spent and certainly something reasonable to experiment with for a nursery school teacher to go in a trailer to the homes where the young children live in order to work and play with the little children of several families in an informal homelike setting. There should be no English teaching as such but simply playing and working accompanied by English language. It would be most surprising if a 3-year-old Navajo child would not learn English in this manner in a relatively short time.

It is possible that within the present school setting by the time the Indian children come to school the most important years for learning a foreign language are already passed. Even so, one should not turn the school day of 6-year-old children into formal language lessons. More success could possibly be obtained if more attention were paid to their general intellectual development rather than to their mastery of English. It is bad enough for the Navajo child to be obliged formally to learn a foreign language; a task that is intrinsically meaningless to the child and does not challenge his intellectual growth. It is worse to make this linguistic mastery the almost sole criterion of scholastic success around which the whole school day turns. Could we not delimit the time spent on formal language teaching and spend a considerable portion of the rest on enriching their intellectual experience?

We observed that nearly one-half of all 12-year-old children at Teec Nos Pos gave wrong judgments about quantity of liquid or weight of a body when the perceptual shape of the container or the body was changed. In this experiment we used interpreters so as not to handicap their performance by linguistic difficulties. We do not think that these children were all mentally retarded at a level below CA 9, but they were apparently not used to being confronted with a question that contrasts perceptual appearance with conceptual conservation.

There are many ways in which the intellect of a 6-year-old child can be developed without making use of difficult linguistic sentences. Children could learn some of the facts of mathematics, probability, mechanics, geography, biology, carpentry, cooking, agriculture, etc., by primarily nonverbal means.

In this way the young intellect of these children would be enriched, the children would be motivated both to learn and to show off their capacity for thinking. Possibly as a byproduct they might even learn English.

During our week at the boarding school we tried out with some success teaching of symbolic logic to children of 9 years and up who were seen daily for a short period. There is no doubt that with such a method the children's capacity for thinking is exercised and they are motivated, as is apparently not the case through formal language learning or class subjects that require linguistic competence as a prerequisite. It is not really difficult to enrich the lives of these youngsters who come from such an experientially deficient environment. Visits to factories, to workshops, to police headquarters, to a newspaper printshop, to a hospital, etc., all these could be turned into experiences around which the growing intellect could ask questions and explore possibilities. Care must be taken however not to turn such experiences into language lessons.

This leads naturally to another point. Why not use the Navajo language for constructive purposes of education? Why not encourage the children to use their native tongue in connection with modern day American events? Moreover, for this kind of teaching no advanced degree in special education seems required. What is needed are individuals who like to be with children and accept them at their own level. It is unfortunate that for many Indian children English becomes the "school" language, largely unrelated to their own experiences, and Navajo remains the "real" language in which their life is symbolized and verbally expressed. Here we surely come close to the crux of the Indian educational problem.

Children are quite sensitive to the prevailing atmosphere, even when they are unaware of or cannot verbally express this knowledge. By and large, an Indian that comes to school is given to understand that his aim should be to learn English and get out of his society, leave the reservation and find a new life within white America. Yet by the time the child is 6 years old he has already become an active member of his society and probably helped with some minor responsible jobs. The "English" life that the school holds out to him is not only of no intrinsic interest to him but contrary to what the child has learned so far. A teacher who insists on using means of communication that are foreign and different for the child is not the kind of person who will get the spontaneous cooperation that is the most important condition for learning.

The curriculum of the school should be geared to the whole life of the pupil, his past, his present, and his realistic future. Why should the school not have relevance to the life as it is actually lived by the Indians? This is a question that goes beyond education proper, but, at least, the educators could remind the powers that be that they cannot work well in an educational vacuum. Why does the school have to reject implicitly the life of the parents of the children and the life of the children themselves as they have lived it so far?

All these considerations stress the overriding importance of the early years in the child's life toward stimulating him in his native intellectual development. In connection with the problems of educating Navajo children the

following points summarize the discussion:

1. Realization of the difference between informal exposure to language within a familiar setting and formally teaching a language as a classroom subject.

2. Recognition of the advantage of informal exposure to language, particularly at a very young age.

3. Employing methods of formal teaching of English that are geared towards overcoming the specific difficulties based on the discrepancies between English and Navajo. This would entail both the study of the linguistic structure of the Navajo language and the linguistic behavior of the Navajo people.

4. Studying the possibility and the advantage of developing the intellectual life of the youngsters at school primarily by non-verbal means.

5. Acknowledging the disadvantages of presenting the young child with the implicit alternative of rejecting his own society in order to choose scholastic success.

6. Experimentation in using Navajo as the first language in school and possible development of it as a written language.

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